UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *28 July 2008*.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-6,8-16,18-20 and 22-30* is/are pending in the application.
      4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-6,8-16,18-20 and 22-30* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
      Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
      Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
      a)☒ All   b)☐ Some *   c)☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
      * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
      Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 07/28/2008 has been entered.

Response to Arguments

2.   Applicant's arguments filed 07/28/2008 have been fully considered but they are not

persuasive.

Regarding rejections on claims 1-3, 5-6, 8, 16, 18-20, 22 and 23-26, applicant argued that Barrus

does not disclose that these functions are performed at any specific point in time in relation to the

initiation and completion of the key presses. Particularly, Barrus does not disclose that the

waking up occurs at the initiation of the key press so that the keyboard is ready in the active

mode when the key press has finished.

        However, the Examiner does not agree. As explained before in the previous office

action, Barrus discloses "Usually, during normal operation, **the microcontroller 230** will be **in a**

low power "sleep" mode until **interrupted by a keystroke signal** from the keyboard interface

circuit 290. **In response, the microcontroller 230 "wakes up"** and **scans the keyboard matrix**

340 to determine which key was pressed…" (column 10 lines 36-41). More specifically,

Barrus discloses "In accordance with a preferred embodiment of the invention a multiple input

OR-gate 350 is provided that **detects, without scanning** the keyboard switch matrix 340, **when**

a key has been pressed. In response to detection of a keystroke, the **OR-gate 350 generates**

a signal supplied to an interrupt input of the microcontroller 230. As will be described in

greater detail later, **in response to receiving such an interrupt signal** from the OR-gate 350,

the microcontroller 230 commences a scanning sequence of the keyboard switch matrix 340

to determine which key was depressed." (column 6 lines 41-51).

The invention of Barrus et al. is a computerized keyboard (10 of Figs. 1-2 and Fig. 4). And

microcontroller is part of the keyboard. Based on the citations, the microcontroller of the

keyboard's sleep mode is interrupted by detection signal of a keystroke. Obviously, this

keystroke signal of Barrus is at the initiation of the key press, at the point of detection of a key

pressed. By the claim language, "the completion of the user input" could be interpreted as either

completion of building up enough voltage to induce a key press detection or completion of a

keystroke. In the first interpretation, Barrus teaches that commencing a scanning sequence is the

first function being performed at the completion of the user input (350 of Fig. 4, column 6 lines

41-51). In the second interpretation, Barrus teaches that reading keystroke from queue is the first

function being performed at the completion of the user input (650-660 of Fig. 6, column 12 line

56 to column 13 line 26). Either way, Barrus obviously teaches a first function being performed

at the completion of the user input.

Regarding rejection on claim 25, applicant argued that Barrus does not teach performing a

communications function in response to the same key press which causes the keyboard to exit

the low power mode.

However, the Examiner does not agree. There is no detail in claim on what the first

communications function is. By two interpretations on the first function as mentioned above, the

first communications function of Barrus could be interpreted as either communications between

keyboard switch matrix and key queue in RAM (650 of Fig. 6) or communications between key

queue in RAM and microcontroller (660 of Fig. 6). Either way, Barrus teaches performing a

communications function at the completion of the user input.

Regarding response to applicant's argument in previous office action, application argued that

there would be no reason for a person skilled in the art to modify the teachings of Barrus to

introduce the features of the present invention such as reducing delays since Barrus has features

to against entering working mode as soon as possible.

However, the Examiner does not agree. Applicant's argument is moot because

applicant's claims do not have anything relate to reducing delays. Yet, the argument is based on

entering completing processing of key queue before entering sleep mode while the claims are

about entering working mode.

Therefore, the rejections are proper and maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 1-3, 5-6, 8, 16, 18-20, 22, 23-26 and 30 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Barrus et al. (US Patent#5410305).

Regarding claim 1, Barrus et al. teach a device (keyboard, 10 of Figs. 1-2 and Fig. 4) having a

first mode (sleep mode) in which the device does not perform a first function (output user's

input) and a second mode (active/working mode) in which the device does perform the first

function wherein the device has a touch-entry user input device for user input and is arranged,

when ill the first mode, to initiate exit (microcontroller of keyboard wakes up) from the first

mode and entry into the second mode at the initiation of a user input (output of OR gate 350 of

Fig. 4, where an indiscriminate keystroke signal wakes up the microcontroller) and to perform

the first function (obvious as either commencing a scanning sequence or reading keystroke from

queue) at the completion of the user input (obvious as either completion of building up enough

voltage to induce a key press detection or completion of a keystroke) wherein the exit from the

first mode occurs before discrimination of the user input (column 6 lines 41-51, column 10 lines

31-57, column 12 line 56 to column 13 line 26, where the microcontroller has to be waken up by

a key press detection first in order to scan keyboard matrix to determine which key was pressed).

Regarding claim 18, Barrus et al. teach a method of transferring a user input device (keyboard), in response to user input, from a first mode (sleep mode) in which the device is not capable of performing a first function to a second mode (active/working mode) in which the device is capable of performing a first function where there is an inherent delay in the transferring, comprising:

detecting the initiation of user input and then immediately initiating a transfer from said first mode to said second mode (column 6 lines 41-51, column 10 lines 31-39, output of OR gate 350 of Fig. 4, where an indiscriminated keystroke signal wakes up the microcontroller);

discriminating an instantaneous user input from a continuous user input after the transfer from the first mode to the second mode has been initiated (column 10 lines 31-57, column 12 line 56 to column 13 line 26, where one of ordinary skill in the art would obviously recognizes that the microcontroller of the keyboard has to wake up first in order to scan keyboard matrix and discriminate a user input);

detecting the completion of the user input (obvious as either completion of building up enough voltage to induce a key press detection or completion of a keystroke) and performing the first function (obvious as either commencing a scanning sequence or reading keystroke from queue).

Regarding claim 22, Barrus et al. teach a touch-entry user input device having a first mode (sleep mode) in which the device does not perform a first function and a second mode (active/working mode) in which the device does perform the first function wherein the device has means for user input and is arranged, when in the first mode, to initiate exit (wake up) from the first mode and

entry into the second mode at the initiation of a user input and to perform the first function

(obvious as either commencing a scanning sequence or reading keystroke from queue) at the

completion of the user input (obvious as either completion of building up enough voltage to

induce a key press detection or completion of a keystroke) wherein the exit from the first mode

occurs before discrimination of the user input (column 6 lines 41-51, column 10 lines 31-57,

column 12 line 56 to column 13 line 26).

Regarding claim 25, Barrus et al. teach a device comprising a first mode (sleep mode) in which

the device does not perform a first communications function and a second mode (active/working

mode) in which the device does perform the first communications function wherein the device

has a touch-entry user input device for user input and is arranged (30 of Fig. 1), when in the first

mode (sleep mode), to initiate exit from the first mode and entry into the second mode

(microcontroller wakes up) at the initiation of a user input (output of OR gate 350 of Fig. 4,

where an indiscriminate keystroke signal wakes up the microcontroller) and to perform the first

communications function (obvious as communications between keyboard switch matrix and key

queue in RAM or communications between key queue in RAM and microcontroller) at the

completion of the user input (obvious as either completion of building up enough voltage to

induce a key press detection or completion of a keystroke) wherein the exit from the first mode

occurs before discrimination of the user input (column 6 lines 41-51, column 10 lines 31-57,

column 12 line56 to column 13 line 26, where the microcontroller has to be waken up by a key

press detection first in order to scan keyboard matrix to determine which key was pressed).

Regarding claim 30, Barrus et al. teach a method, comprising:

detecting an initiation of a user input and then initiating a transfer from a first mode

(sleep mode) in which a device is not capable of performing a first function to a second mode

(active/working mode) in which the device is capable of performing the first function (obvious as

communications between keyboard switch matrix and key queue in RAM or communications

between key queue in RAM and microcontroller), where the imitating the transfer includes

sending a message to another device and receiving a message from the another device (from

keyboard switch matrix to key queue in RAM or from key queue in RAM to microcontroller);

discriminating the user input after the transfer from the first mode to the second mode has

been initiated (column 6 lines 41-51, column 10 lines 31-57, column 12 line 56 to column 13 line

26, where one of ordinary skill in the art would obviously recognizes that the microcontroller of

the keyboard has to wake up first in order to scan keyboard matrix and discriminate a user input);

and

detecting a completion of the user input and performing the first function at the

completion of the user input (obvious as either completion of building up enough voltage to

induce a key press detection or completion of a keystroke).

Regarding claim 2, Barrus et al. teach the limitation of claim 1.

Barrus et al. teach comprising a processor (microcontroller) for detecting the initiation of a user

input and a processor (microcontroller) for initiating the exit from the first mode (column 10

lines 36-39).

Regarding claim 3, Barrus et al. teach the limitation of claim 1.

Barrus et al. teach the first mode is an energy conservation mode (sleep mode).

Regarding claims 5 and 19, Barrus et al. teach the limitations of claims 1 and 18.

Barrus et al. teach wherein user input is performed by depressing a user depressible key

(keyboard input).

Regarding claims 6 and 20, Barrus et al. teach the limitations of claims 5 and 19.

Barrus et al. teach further comprising the step of discriminating an instantaneous depression of

the key from a continuous depression of the key (column 12 line 56 to column 13 line 19).

Regarding claims 23-24, Barrus et al. teach the limitations of claims 5 and 19.

Barrus et al. teach comprising a processor for discriminating an instantaneous depression of the

key from a repetitive depression of the key (column 12 line 56 to column 13 line 19).

Regarding claim 8, Barrus et al. teach the limitation of claim 1.

Barrus et al. teach the entry into the second mode occurs before discrimination of the user input

(column 10 lines 39-41).

Regarding claim 16, Barrus et al. teach the limitation of claim 1.

Barrus et al. teach wherein the time taken to exit from the first mode and enter into the second

mode is less than the time taken to discriminate a user input (column 10 lines and column 12 line

56 to column 13 line 19, wherein the discriminating process obviously takes a certain time period

and comparison).

Regarding claim 26, Barrus et al. teach the limitation of claim 25.

Barrus et al. teach wherein the first communications function comprises transmitting data (Fig. 2,

where the keyboard communicates to a computer, column 10 lines 42-57).

4.   Claims 4, 9-10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Barrus et al. (US Patent#5410305) in view of Wright (US Patent#6912605).

Regarding claim 4, Barrus et al. teach the limitation of claim 1.

But, Barrus et al. do not expressly disclose the second mode is a low power radio communication

mode.

Wright teaches a wireless keyboard having a second mode in a low power radio communication

mode (column 5 lines 43-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to incorporate the wireless mode taught by Wright into the device of Barrus et al., in

order to provide convenient wireless connection.

Regarding claim 9, Barrus et al. teach the limitation of claim 1.

But, Barrus et al. do not expressly disclose further comprising low power radio transceiver means and wherein the exit from the first mode is initiated by sending a message using the low power radio transceiver means.

Wright teaches a wireless keyboard comprising low power radio transceiver means (inherent in wireless keyboard) and wherein the exit from the first mode is initiated by sending a message using the low power radio transceiver means (column 5 lines 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the wireless mode taught by Wright into the device of Barrus et al., in order to provide convenient wireless connection.

Regarding claims 10 and 27, Barrus et al. teach the limitations of claims 1 and 26.

Barrus et al. teach transmitting data (Fig. 2, column 10 lines 42-57).

But, Barrus et al. do not expressly disclose further comprising low power radio transceiver means wherein the first function comprises transmitting data using the low power radio transceiver means.

Wright teaches a wireless keyboard comprising low power radio transceiver means wherein the first function comprises transmitting data using the low power radio transceiver means (column 5 liens 40-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the wireless mode taught by Wright into the device of Barrus et al., in order to provide convenient wireless connection.

5.   Claims 11-15 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Barrus et al. (US Patent#5410305) in view of Kammer et al. (US Patent#6950645).

Regarding claims 11 and 28, Barrus et al. teach the limitations of claims 1 and 26.

But, Barrus et al. do not expressly disclose operating as a Slave in a Bluetooth piconet.

Kammer et al. teach a wireless keyboard operating as a slave in Bluetooth piconet (column 6 line

62 to column 7 line 24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to incorporate a wireless keyboard operating as a slave in Bluetooth piconet taught by

Kammer et al. into the touch-entry user input device of Barrus et al., in order to provide personal

wireless connection.

Regarding claim 12, Barrus et al. teach the limitation of claim 1.

But, Barrus et al. do not expressly disclose operating in accordance with the Bluetooth Standard

wherein the first mode is the Sniff Mode or Park Mode.

Kammer et al. teach operating in accordance with the Bluetooth Standard wherein the first mode

is the Sniff Mode or Park Mode (column 8 lines 4-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to incorporate a wireless keyboard operating in Bluetooth Standard wherein the first

mode is the Sniff Mode or Park Mode taught by Kammer et al. into the touch-entry user input

device of Barrus et al., in order to have power saving mode with wireless connection.

Regarding claim 29, Barrus et al. and Kammer et al. teach the limitation of claim 28.

Kammer et al. teach operating in accordance with the Bluetooth Standard wherein the first mode

is the Sniff Mode or Park Mode (column 8 lines 4-27).

Regarding claim 13, Barrus et al. and Kammer et al. teach the limitation of claim 12.

Kammer et al. further teach the exit from the Sniff Mode is initiated by transmitting a

LMP_unsniff_req message (inherent in column 8 lines 4-19).

Regarding claim 14, Barrus et al. and Kammer et al. teach the limitation of claim 12.

Kammer et al. further teach the exit from the Park Mode is initiated by transmitting a

LMP_accepted message (inherent in column 8 lines 4-19).

Regarding claim 15, Barrus et al. teach the limitation of claim 1.

But, Barrus et al. do not expressly disclose operating in accordance with the Bluetooth Standard

wherein the second mode is the Active Mode.

Kammer et al. teach having wireless devices operating in accordance with the Bluetooth

Standard wherein the second mode is the Active Mode (discoverable mode, column 7 lines 9-19,

column 12 line 59 to column 13 line 35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to incorporate Bluetooth wireless usage taught by Kammer et al. into the device of

Barrus et al., in order to provide personal wireless connection.

Conclusion

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZHIYU LU whose telephone number is (571)272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Zhiyu Lu   /Nay A. Maung/
Examiner   Supervisory Patent Examiner, Art Unit
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/Z. L./
Examiner, Art Unit 2618
September 22, 2008